Remarks

Applicants gratefully acknowledge the time afforded applicants' attorney, Blanche E. Schiller, during a telephone conference on October 24, 2003 with Examiner Alam, in which the terminology of claim 1 and the references were discussed. No formal agreement was reached during that telephone conference.

Reconsideration of the application and allowance of all pending claims are respectfully requested. Claims 1-71 remain pending. Applicants respectfully request that the remarks provided in this Response to Final Office Action be carefully considered, and should the Examiner still have further reservations regarding the allowability of the claims, that he contact applicants' representative at the below listed number.

In the Final Office Action dated August 12, 2003, claims 1-12, 17-35, 40-60 and 65-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimsrud et al. (U.S. Patent No. 6,253,296) in view of Smith (U.S. Patent No. 5,394,531). Applicants respectfully, but most strenuously, traverse this rejection for the reasons herein.

In one aspect, applicants' invention is directed to the allocation of space by a plurality of file systems across one or more storage devices, such that the space on a device is allocated, and thus, consumed in proportion to some weight assigned to that device. For example, in independent claim 1, applicants claim a method of managing the allocation of space on storage devices of a computing environment. The method includes, for instance, obtaining one or more weights for one or more storage devices of the computing environment; and allocating space on at least one storage device of the one or more storage devices in proportion to at least one weight obtained for the at least one storage device, wherein the allocating is performed by a plurality of file systems of the computing environment. Thus, in applicants' claimed invention, space is allocated by a plurality of file systems. Further, space is allocated on at least one storage device in proportion to at least one weight associated with the at least one device. These aspects are very different from the teachings of Grimsrud and Smith, either alone or in combination.

For instance, neither Grimsrud nor Smith teaches or suggests applicants' claimed element of "allocating space on at least one storage device..., wherein the allocating is performed by a

plurality of file systems of the computing environment." This is explained in further detail below. Although applicants are aware that for an obviousness rejection, the references cannot be attacked individually, applicants, for clarity purposes, address each reference individually indicating how each of the references does not show a particular element. Since each reference fails to show that element, then combined those references also fail to teach or suggest that particular element.

As one example, Grimsrud fails to teach or suggest a plurality of file systems. Further, Grimsrud fails to teach or suggest allocating space on at least one storage device by a plurality of file systems. The only mention of a file system in Grimsrud is of a single file system (Col. 10, lines 44-45) or of a single file subsystem (Col. 9, line 23). There is no teaching or suggestion of performing allocation by a plurality of file systems, as claimed by applicants. Thus, Grimsrud does not teach or suggest applicants' claimed invention.

In the Office Action, support for the rejection of this claim element is indicated at Col. 11, lines 43-57 and line 66 to Col. 12, line 3 of Grimsrud. Applicants respectfully submit that a careful reading of those sections do not teach a plurality of file systems. Those sections use the word plurality, but to refer to items other than a plurality of file systems. As examples, in Grimsrud, there is a mention of a plurality of program instructions, a plurality of model pruning criteria, and a plurality of file cluster units, but not of a plurality of file systems. There is no description of a plurality of file systems in Grimsrud, as claimed by applicants.

As described in the specification (e.g., page 2) and known in the art (e.g., see www.webopedia.com/term/f/file_management_system.html), a file system is used to manage operations relating to files. Applicants' invention is directed, in one aspect, to using a plurality of file systems to perform allocation on one or more storage devices. Grimsrud is not concerned with the problems that arise when there are a plurality of file systems performing allocation, as evidenced by the absence of any mention of a plurality of file systems. Since Grimsrud is not concerned with allocation by a plurality of file systems, Grimsrud is directed to a different problem than that solved by applicants' invention. Again, in one aspect, applicants' invention is directed to managing allocation when there are a plurality of file systems performing that allocation. Methodologies that can be used for a single file system are typically not available

when a plurality of file systems are involved. Applicants address the allocation by a plurality of file systems, unlike Grimsrud.

Further, just to clarify, a file cluster, which is a term used in Grimsrud, is distinct from a file system. Again, a file system is used to manage, while a file cluster is a particular unit of allocation (see, e.g., Col. 9, lines 23-25; and claim 3, lines 65-67). Thus, a plurality of file clusters is very different from a plurality of file systems.

Based on the foregoing, applicants respectfully submit that Grimsrud does not teach or suggest a plurality of file systems. Therefore, it follows that Grimsrud fails to teach or suggest allocating being performed by a plurality of file systems, as claimed by applicants.

Smith also fails to teach or suggest a plurality of file systems or performing allocation by a plurality of file systems, as claimed by applicants. Applicants respectfully submit that Smith does not even mention a file system, much less address problems associated with performing allocation by a plurality of file systems. Therefore, it also follows that Smith does not teach or suggest allocating space on at least one storage device..., wherein the allocating is performed by a plurality of file systems.

Since both Grimsrud and Smith fail to teach or suggest applicants' claimed element of allocating space on at least one storage device of the one or more storage devices in proportion to at least one weight obtained for the at least one storage device, wherein the allocating is performed by a plurality of file systems, applicants respectfully submit that the combination also fails to teach or suggest this claimed element. Therefore, applicants respectfully request an indication of allowability for independent claim 1, as well as the other independent claims, and all claims that depend therefrom.

As another example, neither Grimsrud nor Smith, either alone or in combination, teaches or suggests applicants' claimed element of allocating space on at least one storage device of said one or more storage devices in proportion to at least one weight obtained for the at least one storage device. Again, although applicants are aware that for an obviousness rejection, the references cannot be attacked individually, to provide the remarks in an organized fashion, each reference is discussed individually. However, again since each reference fails to teach or suggest

a particular element, the combination of those references also fails to teach or suggest that element, as discussed below.

For example, Grimsrud fails to teach or suggest at least one weight obtained for at least one storage device. While weights are mentioned in Grimsrud, as indicated by the Examiner, those weights are associated with transition arcs used to represent the probability of a transition being made. The weights in Grimsrud are not associated with storage devices, as claimed by applicants. This is explicitly stated in Col. 9, lines 27-32 of Grimsrud, in which it is stated:

> A weight is assigned to each transition arc to represent the
> probability of the transition being made. The weight (probability)
> is computed based on the number of occurrences of the transition
> observed, relative to other transitions from the node.

So, while weights are mentioned in Grimsrud, those weights are not the weights claimed by applicants. In particular, applicants claim at least one weight for at least one storage device. There is no mention in Grimsrud of weights for one or more storage devices. The mere mention of the word "weights" without it being weights for one or more storage devices, as claimed by applicants, does not and cannot teach or suggest applicants' claimed element. Thus, since there is no description at all in Grimsrud of a weight for a storage device, Grimsrud does not teach or suggest applicants' claimed invention.

Further, since there is no teaching or suggestion in Grimsrud of weights for one or more storage devices, it follows that Grimsrud also fails to teach or suggest allocating space on the storage device in proportion to at least one weight obtained for that storage device. This is missing from Grimsrud.

Similarly, Smith also fails to teach or suggest applicants' claimed element of allocating space on at least one storage device in proportion to at least one weight obtained for the at least one storage device.

In Smith, a weighting factor associated with a partition of a cache is used to allocate space for the partition, by which Smith means determining the size of the partition (see, e.g., Col. 2, lines 57-58). In contrast, the allocation of space on a storage device does not involve the changing of the size of the device, but of finding a particular device and location on that device

for the data. There is no teaching or suggestion in Smith of allocating space on a storage device in proportion to a weight obtained for that device, but instead, of using a weighting factor to determine the size of space for a partition. Thus, applicants respectfully submit that Smith does not teach or suggest applicants' claimed invention.

Since both Grimsrud and Smith fail to teach or suggest applicants' claimed element of allocating space on at least one storage device in proportion to at least one weight obtained for the storage device, it follows that the combination of Smith and Grimsrud also fails to teach or suggest this claim element. Since this element is missing from both of the references, applicants respectfully request an indication of allowability for claim 1, as well as the other independent claims, and all claims that depend therefrom.

The dependent claims are patentable for the same reasons as the independent claims, as well as for their own additional features. For example, in dependent claim 2, applicants explicitly claim that each of the plurality of file systems is located on separate nodes of the computing environment. In addition to not having a plurality of file systems as described above, neither Grimsrud nor Smith teaches or suggests a plurality of nodes, as claimed by applicants.

For example, while Grimsrud uses the term "node", the use of that term in Grimsrud is very different from the use of that term by applicants. In Grimsrud, the node is a node in a model that represents an accessed file cluster (Col. 9, lines 23-25). In contrast, in applicants' claimed invention, a node is a computing entity, such as a processor (see e.g., FIGs. 1 and 2), used in processing. There is no teaching or suggestion in Grimsrud of a plurality of file systems located on a plurality of nodes, as claimed by applicants. Further, Smith does not overcome the deficiencies of Grimsrud. In Smith, there is only one cache on one processor. There is no teaching or suggestion of a plurality of nodes or of a plurality of file systems located on a plurality of nodes, as claimed by applicants. Thus, applicants respectfully submit that claim 2 and other similar dependent claims are patentable over the combination of Grimsrud and Smith.

To summarize, applicants respectfully submit that the combination of Grimsrud and Smith fails to teach or suggest at the very least applicants' claimed element of allocating space on at least one storage device of said one or more storage devices in proportion to at least one weight obtained for the at least one storage device, wherein said allocating is performed by a

plurality of file systems of said computing environment. Neither Grimsrud nor Smith performs allocation by a plurality of file systems; Smith does not even mention a file system, and Grimsrud does not mention a plurality of file systems nor allocation by a plurality of file systems. Neither Grimsrud nor Smith allocates space on a storage device in proportion to a weight obtained for the storage device; Grimsrud does not even describe a weight for a storage device, and Smith does not describe allocation on a storage device, but instead, sizing for a cache. Neither Grimsrud nor Smith allocates space on a storage device in proportion to a weight for the storage device, wherein the allocating is performed by a plurality of file systems. The combination of Grimsrud and Smith fails to teach or suggest one or more aspects of applicants' claimed invention.

Based on the foregoing, applicants respectfully request an indication of allowability for all pending claims. Applicants gratefully acknowledge the indication of allowability of claims 13-16, 36-39 and 61-64, if rewritten in independent form. Applicants have not rewritten those claims in independent form at this time, since applicants believe that the claims from which those claims depend are patentable for the reasons above.

Applicants respectfully request that the Examiner contact applicants' representative, should the Examiner still have remaining questions regarding the patentability of the invention over the combination of Grimsrud and Smith.

Respectfully submitted,

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